

**SELF-ALIGNED JUNCTION PASSIVATION FOR SUPERCONDUCTOR
INTEGRATED CIRCUIT**

ABSTRACT OF THE DISCLOSURE

A superconductor integrated circuit (1) includes an anodization ring (35) disposed around a perimeter of a tunnel junction region (27) for preventing a short-circuit between an outside contact (41) and the base electrode layer (18). The tunnel junction region (27) includes a junction contact (31) with a diameter of approximately 1.00 μm or less defined by a top surface of the counter electrode layer (24). The base electrode layer (18) includes an electrode isolation region (36) disposed approximately 0.8 μm in horizontal distance from the junction contact (31) for providing device isolation.